CliniComp, Intl.

Clinical Computer Systems

CIS
Clinical Pathways Administrator

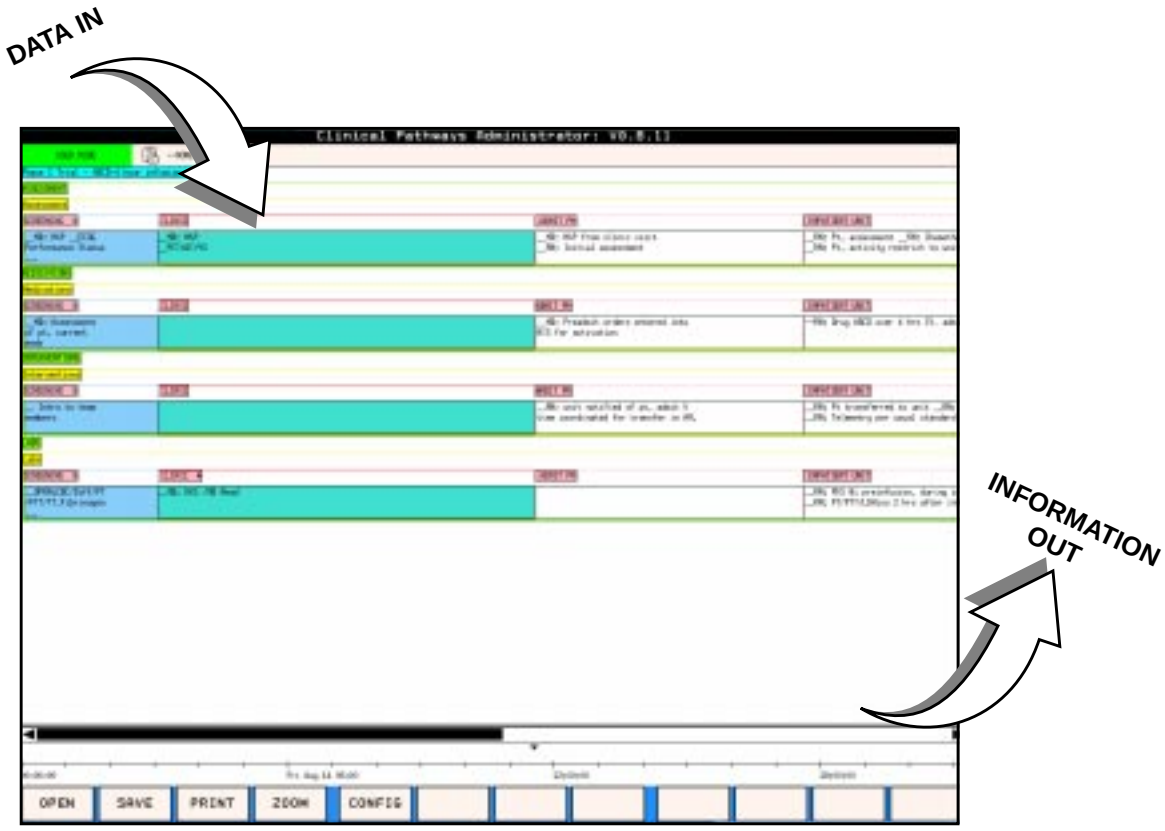
Functional Description

September 1998

CliniComp, Intl.
9655 Towne Centre Drive
San Diego, CA U.S.A. 92121
(800) 350-8202

About the Clinical Pathways Administrator

At CliniComp, Intl., a *clinical pathway* is defined as a diagnosis-specific, multidisciplinary time-sequenced patient care plan. Pathways are used to monitor the order and timing of events that will influence a patient's length of stay in a healthcare facility. There are many definitions of a critical pathway and therefore many different methods of managing and measuring a clinical pathway. However, no matter what method is used, the results can only be as good as the information they're based on, which most often depends on the quality of documentation in a patient's chart. Enter CliniComp, Intl.'s Clinical Pathways Administrator (CPA). CPA is a case management tool that facilitates the quality of documentation in a patient's chart. Data entered in the CPA produces useful information for analysis purposes, which can result in an improvement in the outcomes of a patient population.



Clinical Pathways Administrator

CPA Functionality

The CPA can operate either as a standalone product or in conjunction with CliniComp, Intl.'s Clinical Information Systems (CIS) product. In either case, the CPA is a real-time application, with pathway templates reflecting patient care on a minute/hourly/daily/monthly/yearly or phase basis. The CPA offers the following main features that make it a useful and valuable tool for creating clinical pathway documentation:

❑ **Flexibility**

The CPA allows the healthcare facility to create pathways to meet the needs of the individual healthcare facility regardless of the clinical pathway model the healthcare facility has chosen to implement. A pathway can then be customized for an individual patient. The CPA contains many configurable options that result in a highly flexible tool.

❑ **Variances**

Once a pathway is assigned to the patient, any variation from the defined pathway requires a variance note. Variance notes are designed by the healthcare facility. The system automatically prompts the user to document variances when there are changes in outcomes, edits to the start/stop times, and additions or removals of elements in the pathway. The CPA tool surpasses the limitations associated with paper charting by requiring the user to document variances.

❑ **Querying Data and Variances**

Data from the variance notes and data defined by the CPA module are available for queries. Data may be queried directly or by using an off-the-shelf product, such as Microsoft® Access.

CPA Technical Highlights

✓ The CPA operates independently from hospital or MIS software.

✓ The client may be a PC or an X-terminal.

✓ A mouse is required.

✓ The CPA runs on a UNIX operating system.

✓ The CPA runs off dual servers and has zero downtime. All diagnostics and software updates are completed without interruption to the user.

✓ CPA has different security access levels.

✓ Version control is an integral part of the CPA. Internal identifiers are used to track each “version” of a pathway template.

✓ All charted data is updated redundantly on the central computers on a transaction-by-transaction basis.

✓ All stored data is checked for technical integrity.

✓ Interfaces can be developed with hospital information systems that are HL7 compliant.

✓ The CPA is Year 2000 compliant.

The Pathway Template

Generally, a clinical pathway is configured for a specific diagnosis, for example asthma. Using CPA, a pathway template for asthma would be created by the healthcare facility based on the healthcare facility's existing clinical pathway protocol. After a template is created for a specific diagnosis, it can be tailored for a specific patient, or assigned to a patient. Patients can be tracked on any number of pathways at any given time, and more than one pathway can be displayed at a time.

The CPA operates in three different modes. The selected modes is displayed in the upper left corner.

The CPA template is created using the following elements:

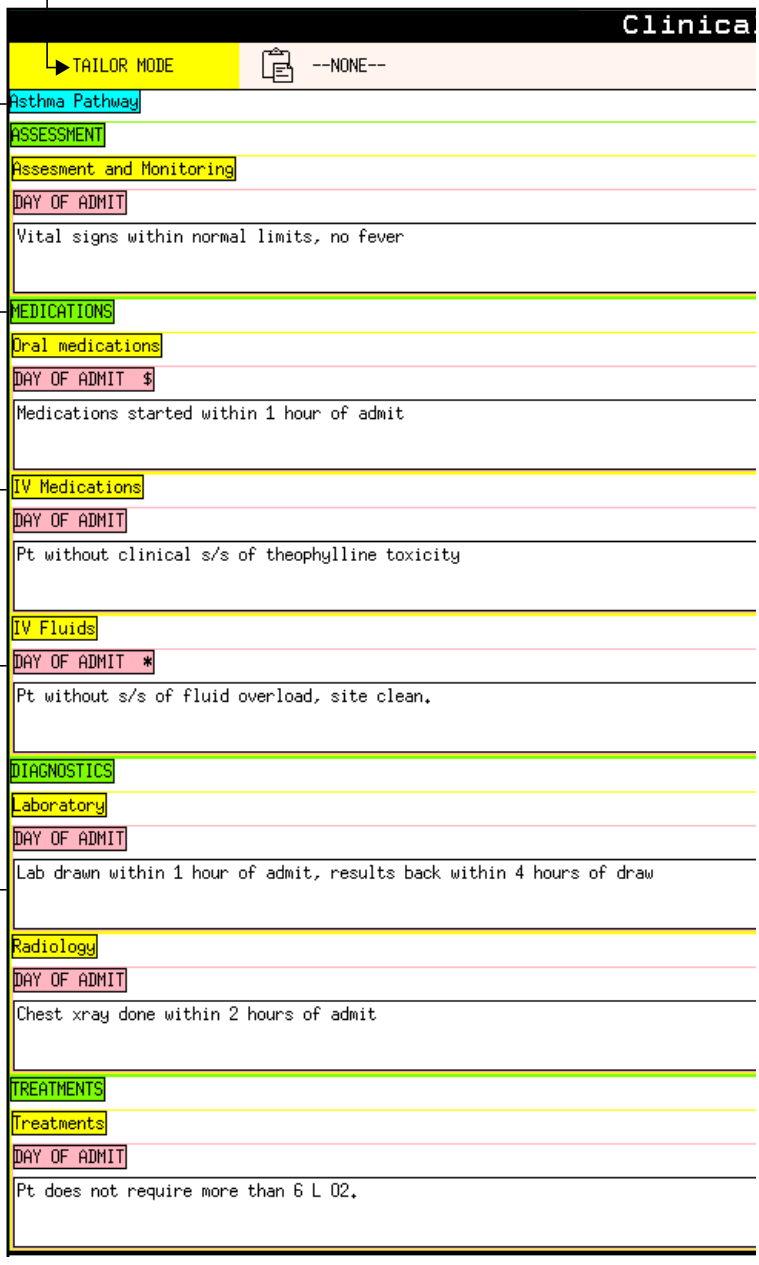
Pathways - name of the pathway

Sections - separates different categories of outcome

Rows - separates categories into subcategories

Steps - shows an interval of time such as a phase, day, stage, etc.

Outcome detail - describes what is expected to happen after treatment; defined by the healthcare facility and can include reference to orders



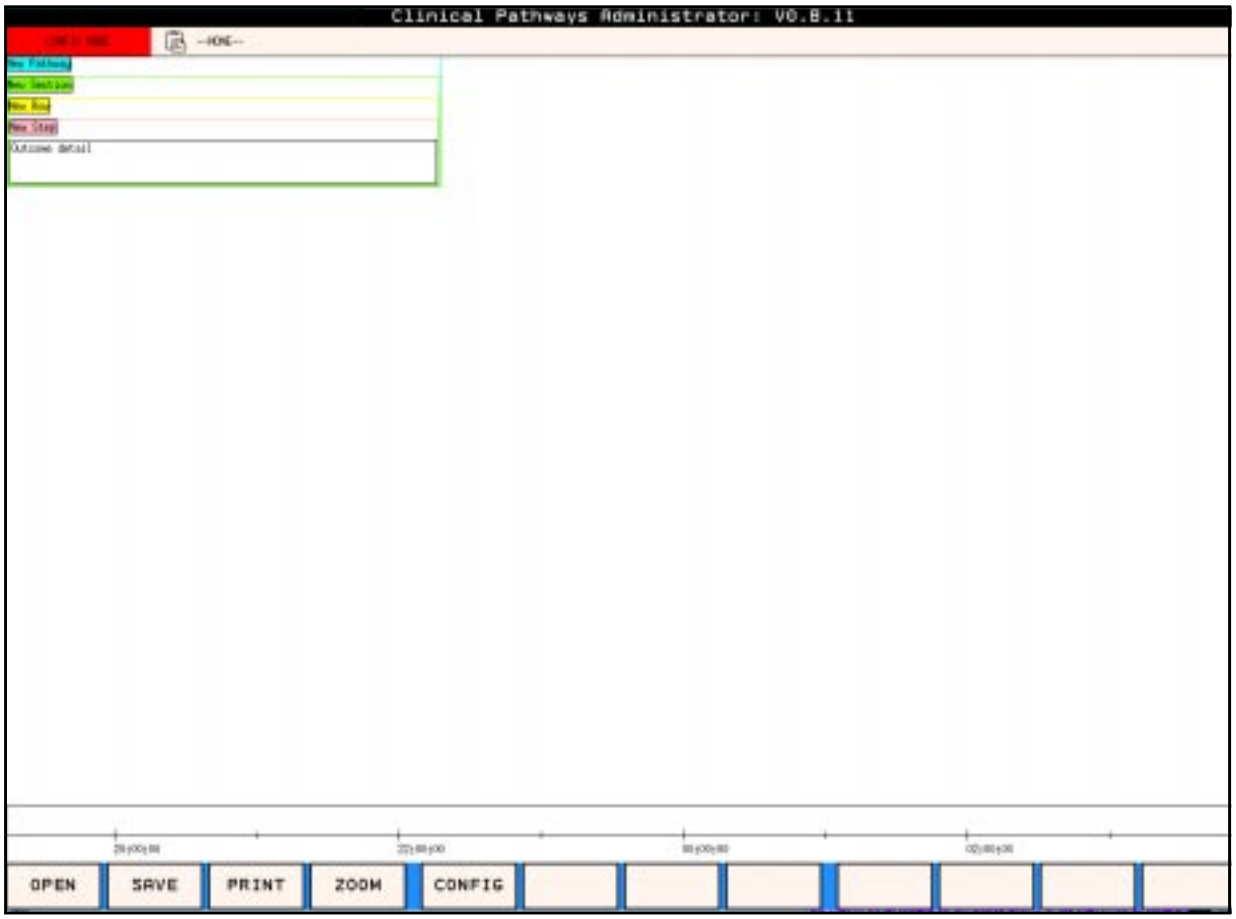
CPA Modes of Operation

The CPA operates in the following three modes: Configuration, Tailor, and User.

Configuration Mode

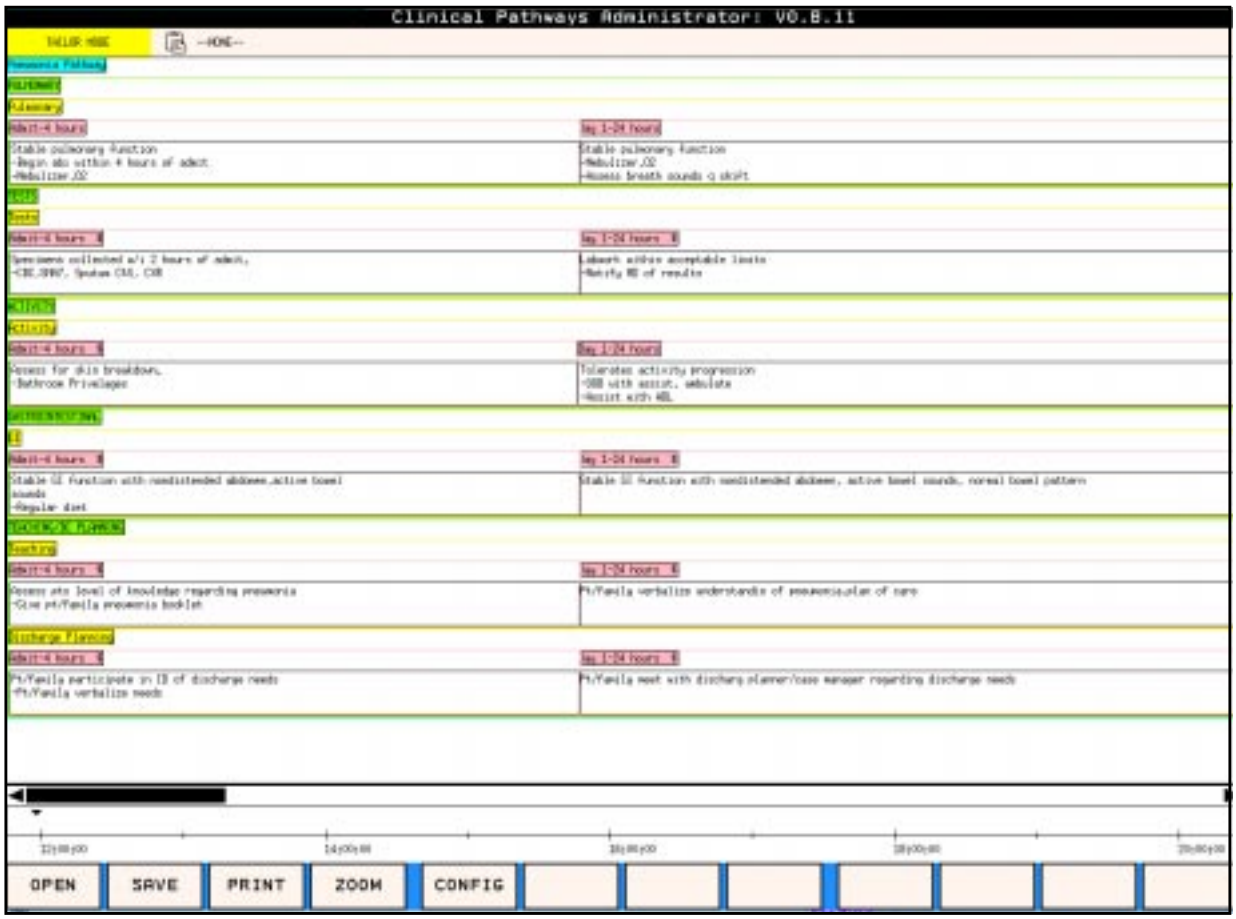
When a pathway template is being created or modified, it is in Configuration mode. After the template is created or modified, it is then available to be “opened” and customized or assigned to any patient.

Version control is an integral part of the CPA and functions in two ways. First, there is an internal version control so that any time a pathway template is changed and saved, it is assigned a new identifier. Any patient on a particular version of a pathway is continued on that version. Any future patients are placed on the newly revised pathway. Second, renaming a pathway creates a new version. Even one character change to the template creates a new pathway. Either option allows the user to identify the version in any data analysis.



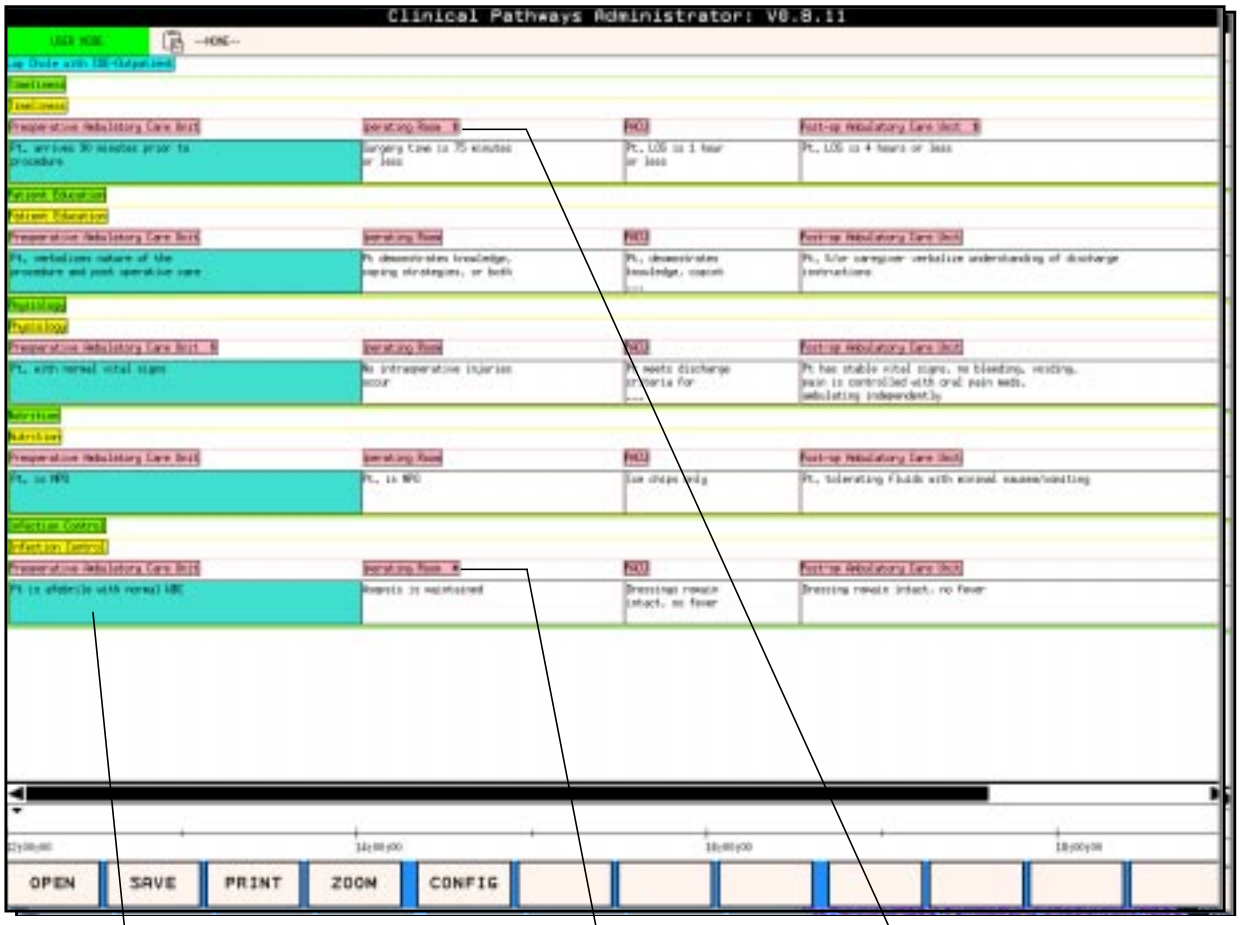
Tailor Mode

Tailor Mode allows a user to individualize a pathway based on a patient's specific needs. A pathway is in Tailor Mode when it has been selected but not yet assigned to a patient. A user can change the patient's outcomes, delete or add sections, rows, or steps, change the start time for all elements except a step, and adjust the end time for a step. All changes to the clinical pathway at this point will generate a single variance note. A pathway is in tailor mode only once, when it is first selected for a given patient.



User Mode

When a pathway is assigned to a patient and is active, it is in User Mode. Any changes to an element requires a variance note. The use of color allows the user to easily distinguish active, past active, and not yet active steps.



A color change indicates active steps.

Operating Room $

The Dollar Sign indicates a change to an assigned pathway.

Operating Room *

An Asterisk indicates a notable event is attached to the element.

Pathway Soft Keys

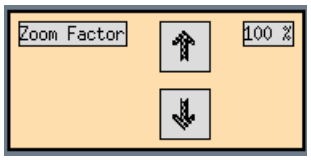
The following soft keys are displayed at the bottom of the CPA screen:

OPEN → Displays a list of available pathways. In User Mode, also displays a list of all pathways assigned to a patient.

SAVE → Saves changes to the selected clinical pathway.

PRINT → The entire clinical pathway can be printed, with every variance and annotation referenced by a unique number. The duration printed is per page and is configurable.

ZOOM →



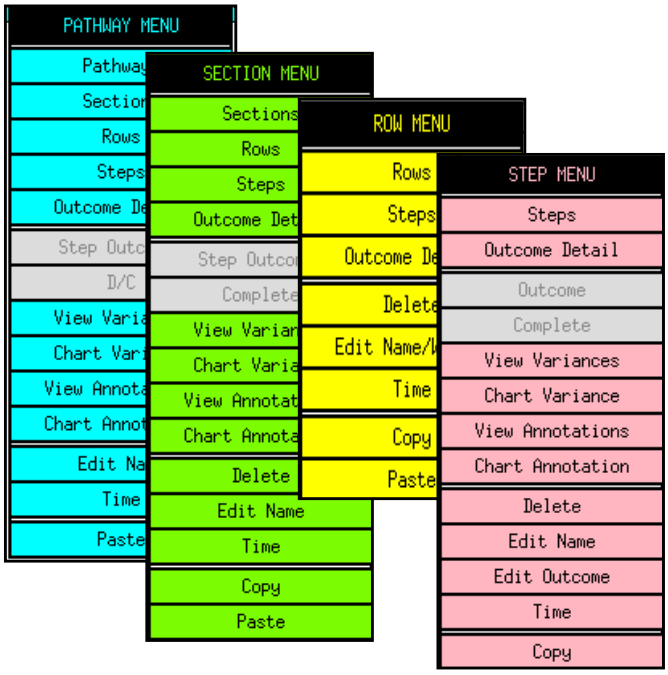
The screen can be scaled to better view the patient's pathway.

CONFIG → Changes to Configuration Mode, allowing the user to create or modify a pathway.

Pathway Elements

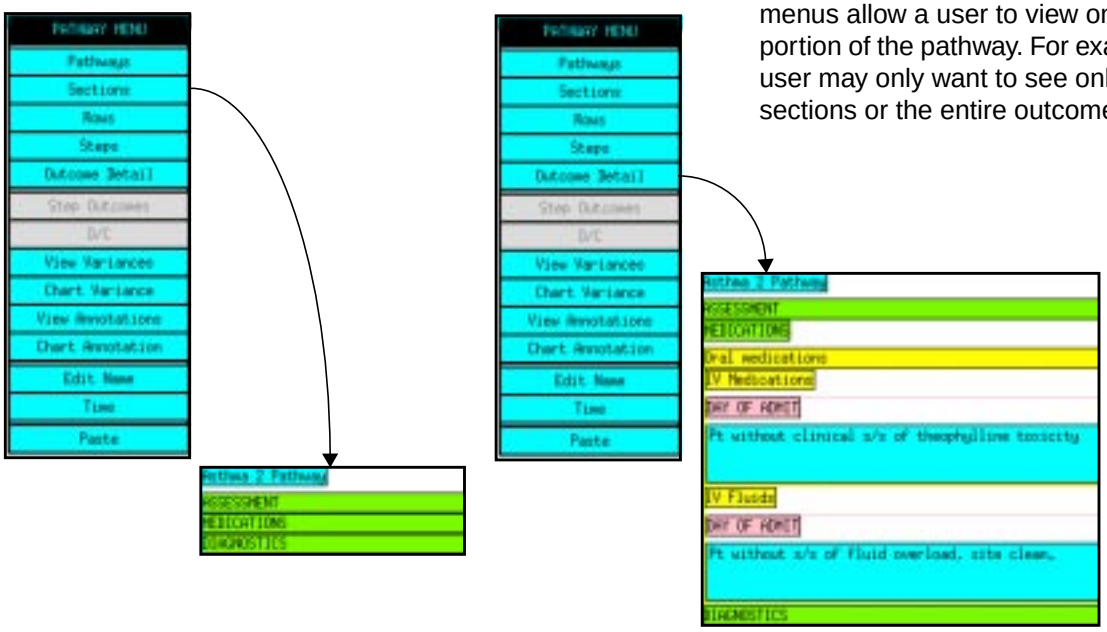
The CPA provides a user-friendly interface to create and modify standard pathway templates. Most of the functions used to create and modify a template are familiar to PC users.

The basic building blocks of a pathway template are the elements: pathways, sections, rows, steps, and outcome detail, which are easily added using the copy and paste tool.



Drop-down menus, the use of the copy and paste tool, and simple word processing functions are all that are necessary to create or modify CPA templates.

Tools available on the drop-down menus allow a user to view only a portion of the pathway. For example, a user may only want to see only sections or the entire outcome detail.



only sections are displayed

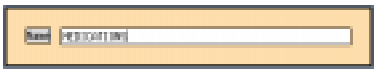
outcome detail is displayed

Element Options

The CPA contains tools to individualize the pathway product for the healthcare facility and for each patient.

✓ **Color is Configurable**
To make it easier to read the pathway, the color of each element is configurable. The color for the element box when an element has expired, been discontinued, or is active is configurable. Also, color changes indicating the stages of the pathway are configurable.

✓ **Names can be Edited**
The names of pathway template elements (pathways, sections, rows, steps, and outcome detail) can be edited easily by using the drop-down menu.



✓ **Sections and Rows can be Added/Deleted**
Whenever a section or row is added or removed, a variance must be recorded.

✓ **Weight Values can be Assigned**
The importance of an element in a clinical pathway can be assigned a weighted value based on a weight scale of 0-10, which is defined by the healthcare facility. This scale will then determine which elements, if changed, will automatically generate a variance symbol.

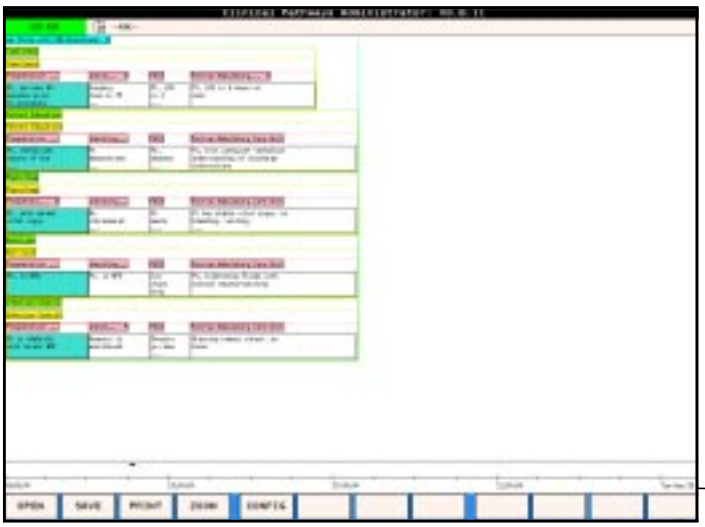
✓ **Start Times can be Changed**
The start time for a row, section, or pathway element can be easily changed using the drop-down menu.

✓ **End Times can be Changed**
Each outcome in a step ends at the step's end time. A subsequent step is automatically adjusted to begin at the end time of a previous step. End times can be easily adjusted using the drop-down menu.

✓ **Two or more pathways can be used at the same time**

Keeping Track of Time

Because a clinical pathway is a time-sequenced patient care plan, the CPA is a real-time product and has a visible calendar timeline. If a pathway phase is extended, it is extended on the timeline and visibly shown by a colored outline around the phase.



The pathway is displayed over time, and the time is represented on a grid at the bottom of the screen. The number of hours shown on the time-line is configurable.

Current time is indicated by an upside down triangle. For example, the time displayed above is 12:10.

Documenting Outcomes, Variances, and Notes

The successful use of a clinical pathway depends on the quality of the data entered. The CPA offers a user-friendly interface to document the completion of interventions, research, and patient care outcomes. The documentation of outcomes and interventions is done directly from the pathway. Once a clinical pathway has been assigned for a patient, the user can then:

✓ **Record status of the element's outcome by:**

- determining if the element's outcome has been met
- determining if the outcome occurred within the predefined range

✓ **Document any variances**

The CPA provides the generating of variances when any changes affect:

- the start time of a pathway, section, or row
- the end time of a step
- the elements of a path, such as adding/removing sections, rows, steps or changing outcomes
- outcome
- the discontinuing or completing of a step outside the expected timeframe as defined by the healthcare facility

✓ **Document any annotations**

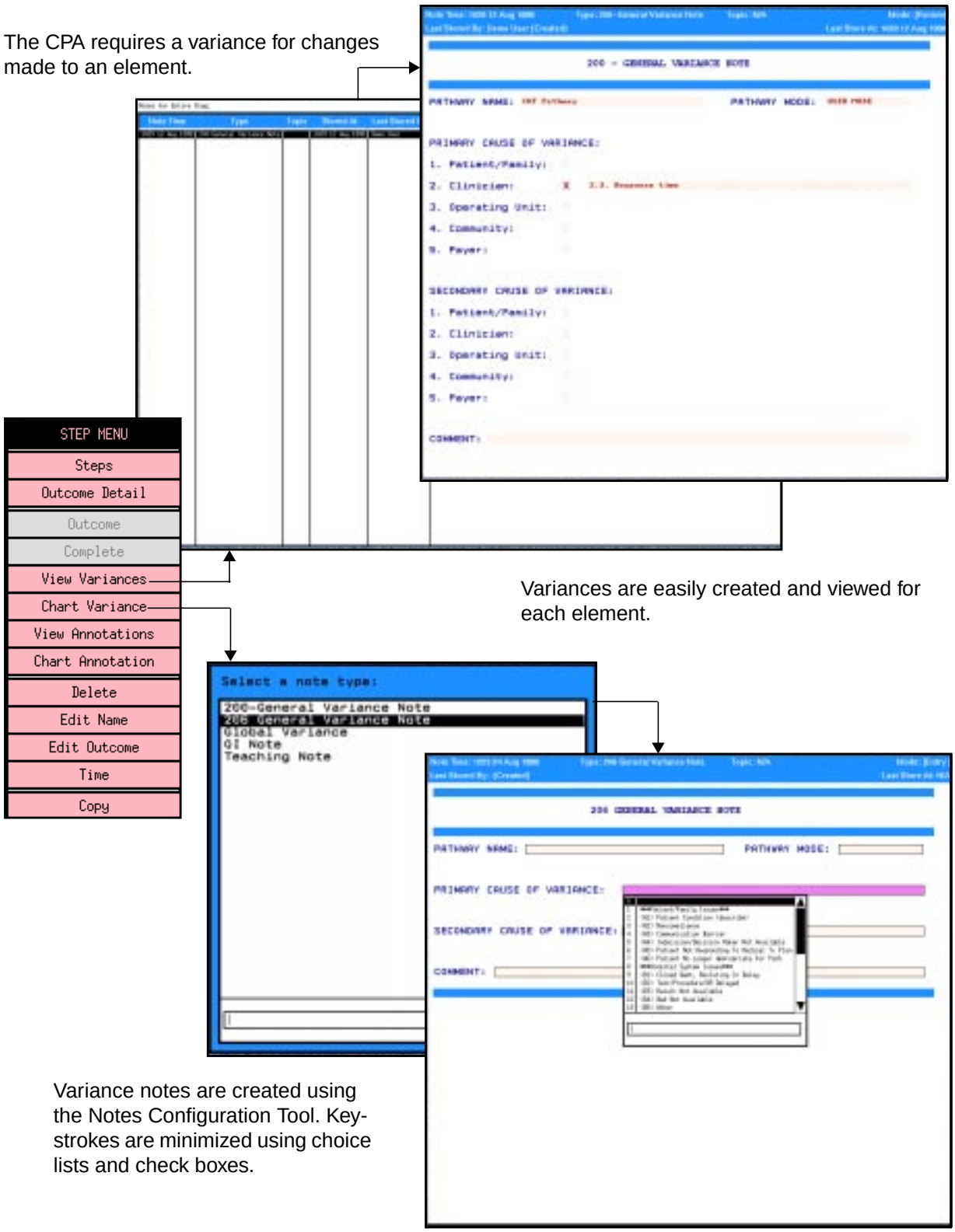
Any number of notes designed by the facility can be accessed using Chart Annotation. Notes may relate to teaching, clinical progress, or other topics designated by the healthcare facility.

Outcomes

When the patient progresses to the next step, the clinician can document that the outcomes have been met for that step and continue to the next step. By selecting Step Outcomes at the pathway level, the user can view the expected outcomes of currently active steps with the option to discontinue those steps with a single keystroke.

Variances

The CPA requires a variance for changes made to an element.

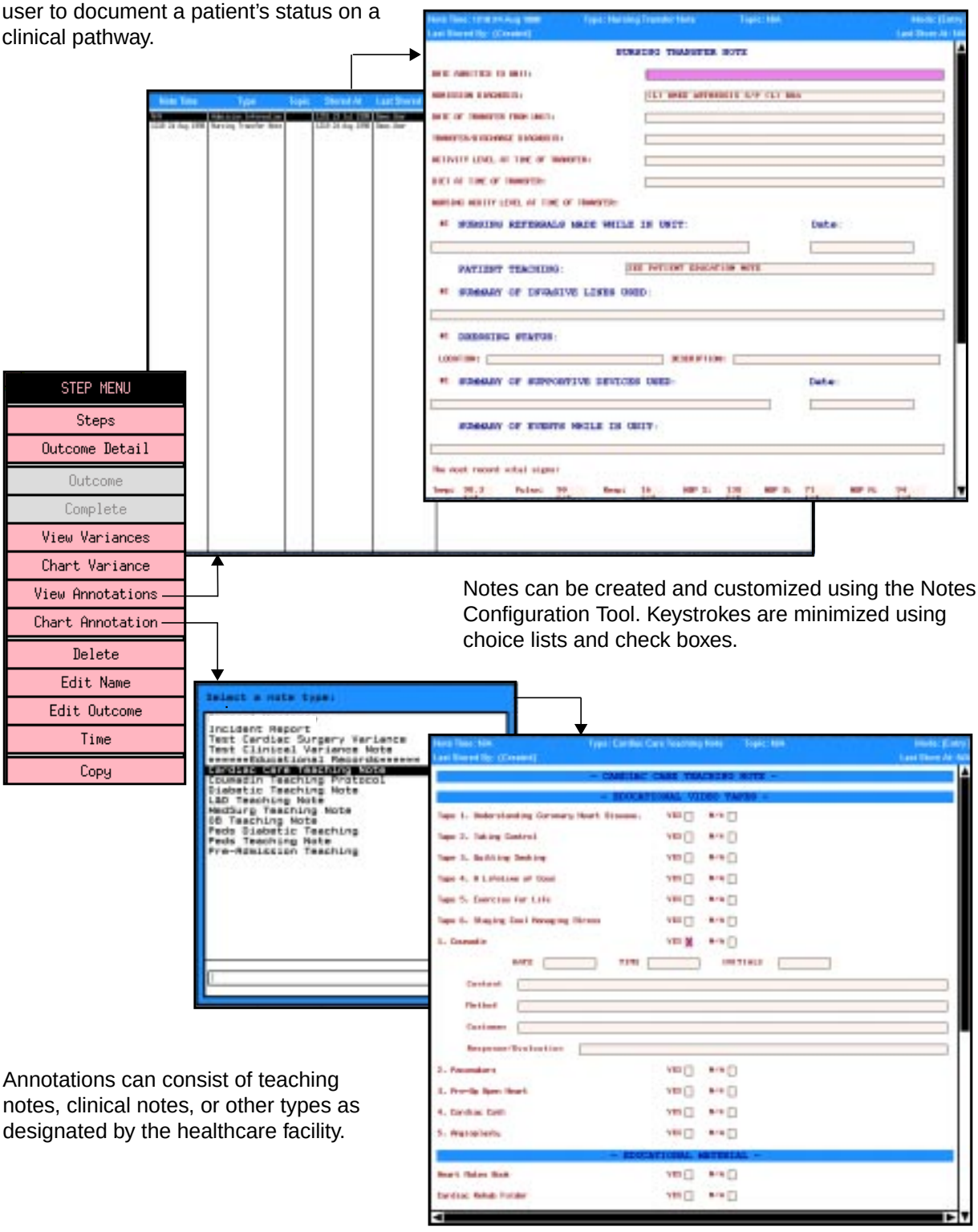


Variances are easily created and viewed for each element.

Variance notes are created using the Notes Configuration Tool. Key-strokes are minimized using choice lists and check boxes.

Annotations

The Chart Annotation tool allows the user to document a patient's status on a clinical pathway.



Notes can be created and customized using the Notes Configuration Tool. Keystrokes are minimized using choice lists and check boxes.

Annotations can consist of teaching notes, clinical notes, or other types as designated by the healthcare facility.

Data Gathering Tools

CPA data is reported in such a way that it can be sorted in a number of different ways based on the needs of the user, including by pathway, physician, variance type, and date. Data can then be queried by any off-the-shelf database management product for future analysis.